SUPPLEMENT TO CO & VOC BACT ANALYSIS
TECHNICAL SUPPORT FOR PERMIT MODIFICATION APPLICATION
SOLVAY MINERALS - CALCINERS A & B FUEL SWITCH

This supplement provides an updated review of the RACT, BACT, LAER Clearinghouse (RBLC) for CO and VOC control technology determinations. In order to determine what CO and VOC control technologies are feasible for the Solvay furnace, the RBLC was searched as of March 2003. Tables 1 and 2 summarize the CO and VOC BACT determinations for all combustion sources (and all fuels) except boilers, steel furnaces, foundries, and casting operations. Boilers are eliminated because they are fundamentally a different type of facility with lower temperatures and heat extraction within the combustion chamber. Steel furnaces, foundries, and casting operations are eliminated because the emissions are collected by the hoods above the molten metal pots or containers. These emissions are from the impurities in the metals (including scrap), with no combustion air treated. In these exhaust airflows the VOC concentration is relatively high, and the exhaust is much more economical to clean than when diluted with combustion air. The RBLC search covered the 10-year period from January 1993 through March 2003.

Table 1: RBLC CO Control Determinations for all Combustion Sources Except Boilers, Steel Furnaces, Foundries, and Casting Operations

Listed CO Control Technology	Number of Determinations
Good combustion practices	21
Process design	6
Thermal or catalytic oxidation	7
None listed	16
Total	50

All of the Table 1 facilities with thermal or catalytic oxidation are also listed in Table 2 as BACT for VOCs. Thus, all of these Table 1 listings of oxidation add-on controls are actually VOC BACT determinations with the coincidental benefit of CO control. None of the BACT determinations of thermal or catalytic oxidation are actually for CO, and therefore are considered "technically infeasible" for CO control. Solvay concludes that "good combustion practices" is considered BACT for CO.

Table 2: RBLC VOC Control Determinations for all Combustion Sources Except Boilers, Steel Furnaces, Foundries, and Casting Operations

Listed VOC Control Technology	Number of Determinations
Good combustion practices	5
Process design	3
Thermal or catalytic oxidation	11
Adsorption	2
None listed	29
Total	50

The RBLC analysis shows that 37 of the 50 (74 percent) technologies consider good combustion practices, a well-designed process, or nothing as BACT for VOC control. These are not add-on control technologies. The Table 2 summary indicates that add-on controls have been installed on some sources with VOC emissions and can be considered technologically feasible. Both regenerative thermal oxidation (RTO) and regenerative catalytic oxidation (RCO) have potential for control efficiencies over 95 percent. The adsorption process is eliminated in favor of RTO or RCO because of the high volume of gas to be treated. The adsorption process cost will be well above the RTO or RCO cost on a per-ton of VOC controlled basis. Details of the RBLC search are attached.

The cost analyses for the retrofit of both an RTO (with 95-percent heat recovery) and an RCO (with 70-percent heat recovery) system are attached. An analysis was also performed for lower heat recovery systems, and the costs are higher than for the attached cases. The attached cost analyses are based on the emissions from Source 17 producing at its capacity throughput rate of 320 tph. The measured VOC emissions of 0.8 lb/ton of throughput (see CT-1347 permit application submitted June 4, 1997 and issued February 6, 1998), or 1,121 tpy are available for control. This analysis shows a similar cost for both RTO and RCO, which is over $7,000 per ton of VOC controlled. Solvay believes that $7,000 is well above a reasonable cost for installation of either of these VOC control technologies. Therefore, BACT for VOC emissions from Solvay's modified Source 17 is considered to be "good combustion practices."